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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,106	03/26/2004	Ming-Ho Yang	67,200-1165	8034
7590 09/11/2007				
TUNG & ASSOCIATES		EXAMINER		
Suite 120		CHEN, BRET P		
838 W. Long Lake Road		ART UNIT		
Bloomfield Hills, MI 48302		PAPER NUMBER		
		1762		
		MAIL DATE		
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		09/11/2007		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/810,106

Applicant(s)

YANG ET AL.

Examiner

B. Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_.

### DETAILED ACTION

Claims 1-20 are pending in this application.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-2, 5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Comita et al. (6,368,567).** Comita discloses a method for removing wafer processing by-products from gas fluid exhaust systems utilizing an energy source placed within an exhaust channel either alone or in combination with a cleaning gas by providing a cleaning gas source internal to the exhaust channel to further react with and convert exiting by-product residues to gaseous fluids (col.3 lines 21-41). In one example, a deposition reactor 100 is utilized to deposit silicon film by thermal CVD at, for example, 600 C., as much as about 2 to 3 feet of conduit 135 could be heated above room temperature or about 70 F. by exhausting deposition gases (col.3 line 58 – col.4 line 6 and col.1 lines 32-47). A cleaning process for the silicon deposition process is carried out by raising the reactor 100 temperature to above about 900°C and injecting HCl into reactor 100 (col.4 line 66 – col.5 line 20). The cleaning gas can be HCl which react or recombine with or otherwise break down by-products present within the conduit to form gaseous by-products which are more easily removed by exhaust treatment systems (col.3 lines 42-57). It is

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noted that the reactor has interior surfaces as shown in Figure 2. It is also the examiner's position that the silicon is the repellant coating and that HCl is the cleaning gas.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 3-4, 6, 9-13, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Comita et al. (6,368,567).** Comita discloses a method for removing wafer processing by-products from gas fluid exhaust systems utilizing an energy source placed within an exhaust channel either alone or in combination with a cleaning gas by providing a cleaning gas source such as HCl internal to the exhaust channel to further react with and convert exiting by-product residues to gaseous fluids as noted above. However, the reference remains silent on a specific thickness.

It is noted that the reference clearly teaches the deposition of a silicon film and that the reactor is subsequently cleaned by injecting an HCl cleaning gas. One skilled in the art would reasonably expect that the same effect could be obtained regardless of the thickness of the film

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and hence, would have been obvious to utilize different thicknesses with the expectation of obtaining similar results in the absence of a showing of unexpected results.

In addition, the applicant requires specific temperatures and pressures of depositing the repellent coating layer. Temperature and pressure are commonly varied in a CVD process to optimize the deposition process. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as temperature and pressure through routine experimentation in the absence of a showing of criticality.

The limitations of claims 4, 6, 9-13, 16-19 have been addressed above.

**Claims 7-8, 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Comita et al. (6,368,567) in view of Tamaki et al. (5,546,890).** Comita discloses a method for removing wafer processing by-products from gas fluid exhaust systems utilizing an energy source placed within an exhaust channel either alone or in combination with a cleaning gas by providing a cleaning gas source such as HCl internal to the exhaust channel to further react with and convert exiting by-product residues to gaseous fluids as noted above. However, the reference fails to teach a silicon carbide film.

Tanaki teaches of utilizing interhalogen compounds such as  $\text{ClF}_3$  gas to clean the inside chamber of a semiconductor manufacturing apparatus (col.1 lines 7-20). In one embodiment, Tanaki teaches that the cleaning gas is regularly used to remove a layer such as a polysilicon layer, a silicon carbide layer, or the like formed on the inner wall of a chamber (col.1 lines 21-45). It would have been obvious to utilize Comita's process to remove silicon carbide films

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because Tanaki teaches that cleaning gases are conventionally used to remove silicon and silicon carbide films.

The limitations of claims 8, 14-15 have been addressed above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Chen whose telephone number is (571) 272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bc  
9/6/07



**BRET CHEN**  
**PRIMARY EXAMINER**